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10/777,705	02/13/2004	Shinya Onda	Q77323	5700

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EXAMINER

CHIEN, LUCY P

ART UNIT PAPER NUMBER

2871

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/777,705	Applicant(s) ONDA ET AL.	
	Examiner Lucy P. Chien	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 4, 20 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/13/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

Figure 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 4,20,22 are objected to because of the following informalities:

Claim 4,20 recites the limitation plurality of accumulating capacitance lines in last sentence. There is insufficient antecedent basis for this limitation in the claim. Does not disclose where the capacitance line is located.

Claim 22, recites "...correspondence with a lengthwise direction..." Does not disclose if the lengthwise direction is horizontal or vertical or diagonal.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1,2,3,6,11,14 are rejected under 35 U.S.C. 102(b) as being anticipated by lida et al (US 5929959).

Regarding claim 1, lida et al discloses in Figure 5 a liquid crystal display comprising of a first substrate (101), a second substrate (103) and a liquid crystal (107) retained between the first substrate (101) and the second substrate (103). At least one first conductive column (111) on the first substrate (101) and at least one conductive column contact portion (109B and 110) electrically connected to the conductive column (101) and formed above the second substrate (103). A seal (108), which bonds the first substrate (101) and second substrate (103) by contacting at least one part of the first conductive column (111) except at a part of the first conductive column (111), which connects the conductive column, contact portion (109B and 110).

Regarding claim 2, lida et al discloses in Figure 5 a first conductive column (111) comprises of a ground column (111 connected to ground electrode 104 which makes it a ground column) and a first electrode (109A), which covers the ground column.

Regarding claim 3 lida et al discloses in Figure 5, at least one conductive column contact portion (109B and 110) formed on an input terminal (109A/109B) which inputs an external signal (shown better in Figure 6, 105c = terminal, 105a=signal electrodes, 112=source line), where the input terminal is formed on the second substrate (103).

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Regarding claim 6, lida et al discloses in Figure 5, a plurality (Figure 7, 110) of first conductive columns (111) contact the conductive column contact portion (111 and 110).

Regarding claim 11, lida et al discloses in Figure 5, the second conductive column (figure 7, 110) is formed on the conductive column contact portion (109B and 110) and of the second substrate (103), where the second conductive column (Figure 7, 110) is connected electrically by a pixel electrode (Figure 7, 102) to the first conductive column (Figure 5, 111 and Figure 3, 110).

Regarding Claim 14, lida et al discloses in Figure 7 a second conductive column 111 located at the bottom 110, which is connected electrically by 102 to the first conductive column (the first 110 above the VIII) at a plurality location.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4,8,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Sugimoto et al (US 6771346).

lida et al does not disclose a lead wiring extending from one of the plurality of capacitance lines to the outside of the display area and electrically connected to the input terminal. Also, the conductive column contact portion is formed on the lead wiring.

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Shiba discloses a lead wiring (711) connected to capacitance line (Cj)(also stated in claim 11 of Shiba) and the lead wiring (711) are connected to the input terminals (831, 831a,). In Figure 4, the Conductive Column (115) is connected to a wiring (121-1).

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display to include Shiba's connecting wires to eliminate need for COM terminal.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Matsuhira (US 5860212).

lida et al does not disclose the first conductive column is reduced in width from a surface of said first substrate towards the conductive column contact portion.

Matsuhira discloses (Column 1, rows 19-27) the conductor width cannot be reduced to less than 100 .mu.m which causes limitations on the pattern shape. It is known that you can adjust the conductive column's size.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display to include Matsuhira's conductor width reduction limitation to adjust the conductive column size to fit between the two substrates.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Hinata et al (US 5179460).

lida et al does not disclose the first conductive column comprised of an elastic resin.

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Hinata et al discloses (column 6, rows 19-28) that the stresses that occur are absorbed in the elastic resin layer. As a result, the cracks on the electrode and damage to the opposing glass substrate can be reduced, which increases the quality of the device.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display to combine with Hinata et al's elastic resin layer to reduce damages and increase the quality of the device.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Ichioka et al (US 2003/0137629 A1).

lida et al does not disclose a spacer formed in a seal.

Ichioka et al discloses (Page 6, [0106]). The seal member (42) includes spacers (138) for use to maintain a predetermined gap between the substrates.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display to combine with Ichioka et al's elastic resin layer to maintain a gap between the substrates to fit a liquid crystal between the two substrates and other components.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Yamazaki (US 6587169).

lida et al does not disclose that the distance between the first and second substrate is maintained substantially constant.

Yamazaki discloses a gap between the first and second substrate being constant because of the predetermined thickness, which is formed around the liquid crystal layer so that the liquid crystals are not leaked.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display to combine with Yamazaki et al's distance between the first and second substrate constant to prevent leakages.

Claim 12,13 are rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Den Boer et al (US 6124606)

lida et al does not disclose a circumference of a first conductive column from a cross section perpendicular to a surface of the first substrate has an arched shape. Nor does it disclose a circumference of the second conductive column from a cross section perpendicular to a surface of the first substrate has an arched shape.

Den Boer et al discloses in figure 4 a circumference of the first conductive and second conductive column from a cross section perpendicular to a surface of the first substrate has an arched shape. (88) (90). It is known to make the conductive column's arched shape to provide contact holes for needed contacts.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display to combine with Den Boer et al's arched shaped circumference conductive column to enable the formation of uniform counter electrode film on the resin columns to be improved.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959).

lida et al discloses in Figure 5 a liquid crystal display comprising of a first substrate (101), a second substrate (103) and a liquid crystal (107) retained between the first substrate (101) and the second substrate (103). At least one first conductive column (111) on the first substrate (101) and at least one conductive column contact portion (109B and 110) electrically connected by a pixel electrode (Figure 7, 102) to the conductive column (101) and formed above he second substrate (103). A seal (108), which bonds the first substrate (101) and second substrate (103) by contacting at least one part of the first conductive column (111) except at a part of the first conductive column (111) that connects the conductive column contact portion (109B and 110).

It is known that in order for the device to function there would have to be a stable connection.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display and the means for making the electrical connection between the first conductive column and conductive column contact portion stable to provide connections so the device would function.

Claim 18,19 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) in view of Hoshikawa et al (US 4640583).

lida et al does not disclose the method for manufacturing a liquid crystal display where the seal is cured while adhering to part of the first conductive column other than a part which contacts the conductive column contact portion nor the method for

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manufacturing a liquid crystal, but having all these components it is known how to form a liquid crystal display.

lida et al does disclose in figure 5 a first conductive column (111) with a ground column formed by a conductive column (111) and a ground electrode (109a) and covering the first conductive column (111) with a first electrode (109a). Also, has a second conductive column (Fig. 7, 110) on the conductive column contact portion of the second substrate.

Hoshikawa et al discloses in the abstract a first sealant which strongly adheres to the substrate and when the substrates are combined together the sealants are cured to form a display panel.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display and to use Hoshikawa et al's method for curing and adhering to construct a display panel.

Claim 20,21 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) and of Hoshikawa et al (US 4640583) in view of Shiba et al (US 5684555)

lida and Hoshikawa do not disclose forming a lead wiring extending from at least one of the plurality of accumulating capacitance lines to an outside of the display area and electrically connected to the input terminal.

Shiba discloses in figure 4, a capacitance line (Cj) connected to a wire (731) is connected to an input (Figure 3, 831) is connected to output lead (821).

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display and to use Hoshikawa et al's method for curing and adhering to construct a display panel and using Shiba's capacitance line connected to the lead wire to form a liquid crystal display.

Claim 16,22 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) and of Hoshikawa et al (US 4640583) and of Shiba et al (US 5684555) in view of Hattori et al (US 6671009).

lida et al, Hoshikawa et al, and Shiba et al do not disclose rubbing an alignment film formed on the first electrode or each of the first electrode and pixel electrode in correspondence with the lengthwise direction of the first conductive column or each of the first conductive column and the second conductive column along a surface of the first substrate and second substrate.

Hattori et al discloses (column 1, row 62-66), rubbing an alignment film surface in a predetermined direction. It is known method to have to rub the alignment film in a predetermined direction to form pretilt desired angles.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display and to use Hoshikawa et al's method for curing and adhering to construct a display panel and using Shiba's capacitance line connected to the lead wire and use Hattori's method of rubbing an alignment film to complete the liquid crystal display device and provide pretilted angles.

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Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over lida et al (US 5929959) and of Hoshikawa et al (US 4640583) in view of Kishimoto (US 6396559).

lida et al and Hoshikawa et al do not disclose the ground column made of photosensitive resin.

Kishimoto et al discloses (Column 8,rows18-22) using a photosensitive resin so the spacer would be sufficiently exposed to light.

It would have been obvious to one of ordinary skill in the art, at the time when the invention was made to modify lida et al's liquid crystal display and Hoshikawas et al's method for curing and adhering to construct a display panel to include Kishimoto's photosensitive resin to provide the space with sufficient light exposure.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lucy P. Chien whose telephone number is 571-272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lucy Chien
Examiner
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